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SYSTEMATIC CHANGES IN CERTAIN EPHEMEROPTERA STUDIED BY R. K. ALLEN

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Abstract.—*Heptagenia bella* (Allen & Cohen) is placed herein as *Nixe bella,* NEW COMBINATION. *Serratella thailandensis* Allen NEW SYNONYM is a junior objective synonym of *Cincticostella gosei* (Allen). The species *Ephemerella* (*Dentatella*) *bartoni* (Allen) is properly referred to as *Eurylophella* (*Dentatella*) *bartoni* Allen. *Caurinella idahoensis* Allen is confirmed to be a valid genus and species of uncertain affinities. The genus *Vietnamella* Tshernova is transferred from Ephemerellinae to Teloganodinae.

Key Words.—Insecta, Ephemeroptera, mayfly, taxonomy

Edmunds & Murvosh (1995) presented an obituary for the late Richard K. Allen. This paper discusses and corrects some systematic situations resulting from the taxonomic work of Allen, and detailed in an unpublished bibliography and list of taxa (GFE & CMM, unpublished), which is available from either of us. In most cases no comment is made on published name changes made by Allen or others.

Labels on Type Material.—It is essential for those subsequently studying types or paratypes of species described by R. K. Allen to note that in some cases the slides, at least, bear names that apparently were changed before publication, and that slides of holotypes or supplementary types are not always labeled as such. Usually there is a red margin on a slide label where the specimen is part of a holotype and a blue edge slide label designates a part from a paratype. This too is inconsistent in the collection. Localities and dates will allow these specimens to be associated with their correct names; in a few cases obvious types or supplementary types in vials or parts on slides are not labeled as such. There are also specimens or slides labeled as types or supplementary types that are manuscript names.

Systematics.—We have examined the types of *Heptagenia bella* Allen & Cohen (1977) of Mexico at the California Academy of Sciences and note that the characters place this species as *Nixe bella,* a genus described after the name *bella* was proposed. Allen (personal communication) was aware of the need for the generic reassignment. Other specimens of *Nixe* from farther south appear to belong to one or more undescribed but similar species.

Allen (1975:20) named *Ephemerella* (*Cincticostella*) *gosei* Allen based on Gose's figure 38 labeled *Ephemerella* TEB (Gose, 1969) based on specimens from Chanta Buri, Thailand, 20 Jun 1961. Allen (1980: 76) named *Serratella thailandensis* Allen, based on the same *Ephemerella* TEB (Gose, 1969) and raised *Cincticostella* to generic rank. *Serratella thailandensis* NEW SYNONYM is a junior objective synonym of *Cincticostella gosei.*

Allen & Murvosh (1983) and Allen (1990) place *Epeorus* (*Iron*) *margarita* Edmunds and Allen (1964) from the U. S. and Mexico in *Iron,* thus restoring

Iron as a full genus. Recognition of *Iron* as a genus is now common but the generic placement of some Asian species of the complex are still to be resolved and will certainly influence the final resolution of the taxonomy of the species of *Iron* and related taxa.

The unnamed species *Thraulodes* sp. F of Allen & Brusca (1978) (Central America) is a member of the genus *Farrodes.* The correct generic assignment was recognized by R. K. Allen and H. M. Savage (personal communications). *Farrodes* occurs from Argentina to Texas (see Davis 1991). *Thraulodes* sp. G from Mexico was recognizable by several mayfly specialists as belonging to the genus *Terpides,* but this has been indicated earlier by Savage (1987) on a distribution map of *Terpides.* Savage (personal communication) confirmed that this map was based in part on Allen's *Thraulodes* sp. G.

Allen (1977) described *Ephemerella bartoni* Allen and placed it in the subgenus *Dannella. Ephemerella bartoni* did not fit into the definitions and keys of any of the existing subgenera of the Ephemerellidae. McCafferty (1978) transferred *bartoni* from the subgenus *Dannella* to *Eurylophella.* Allen (1980) raised the subgenera of *Ephemerella* to generic rank, retained *bartoni* in *Dannella* and placed it in a new subgenus *Dentatella.* Gill 4 of *bartoni* does not cover the remaining gills as fully as in other species of *Eurylophella* and the elongation of abdominal segments 8 and 9 is relatively less than in other *Eurylophella.* Although Allen felt strongly that he was correct about the generic placement of *bartoni,* we feel certain, as did McCafferty, that *bartoni* is the most plesiomorphic species of *Eurylophella.* We concede that the examination of either males or mature eggs from females or mature larvae would be needed to provide overwhelming proof of the generic assignment of *bartoni,* but the evidence is adequate that *bartoni* is cladistically a member of *Eurylophella* and is informative because it is the least specialized larva of the genus (the adult is unknown). McCafferty and Wang (1994) placed *Dentatella* as a subgenus of *Eurylophella.*

When Allen (1984) described *Caurinella idahoensis* Allen as a new genus and species of Ephemerellidae, from a single specimen, he provided no figures. Interestingly, the type specimen was first sent to R. W. Baumann at Brigham Young University who noted the unique nature of the specimen and forwarded it to Allen. When Allen described the species, he had forgotten who had sent the specimen (Allen, personal communication). Some entomologists privately have expressed doubt concerning the validity of the genus. The caudal filaments are similar to those of *Serratella,* but this character is shared also by the Asian *Uracanthella* and *Cincticostella* and some populations of the European *Ephemerella ignita* (Poda). We have examined the type of *Caurinella idahoensis* and believe it to be a distinct valid genus. The characters of the larva suggest that *Caurinella* is not a specialized derivative of *Serratella.* When the adults are discovered, its systematic position should be clarified. We include here a lateral view of the diagnostic apical abdominal segments of the larvae (Fig. 1). Vincent F. Lee loaned us an additional specimen of *C. idahoensis* (IDAHO. *VALLEY Co.:* Eggers Cr., Trib. Silver Creek, 24 May 1978, R. C. Biggam) from the California Academy of Sciences, San Francisco. The type specimen and the Eggers Creek specimen are female larvae, roughly the same size and both have well developed wing pads that are not yet as dark as they would be if the specimens were ready to emerge.

In the bibliography of Allen's mayfly papers we noted that Henry (1995) was

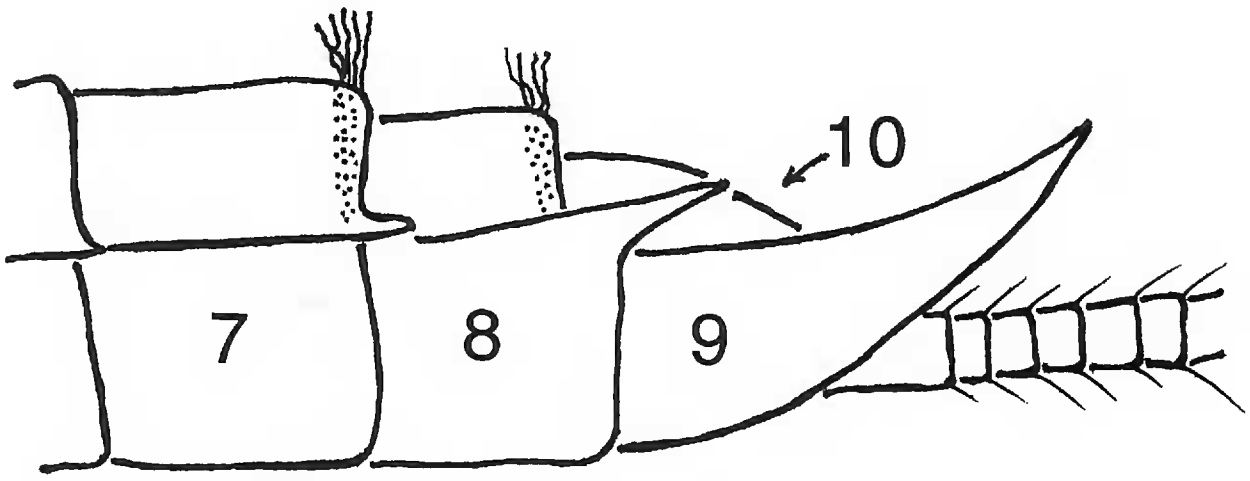

Figure 1. *Caurinella idahoensis*. Lateral view of abdominal segment 7 to 10 of larva.

raising the subgenus *Neochoroterpes* (Allen, 1974) of *Choroterpes* to generic status; McCafferty et al. (1993) and Henry (1993) have since elevated *Neochoroterpes* to generic rank.

Allen (1980) placed the genus *Vietnamella* Tshernova (1972) (*V. thani* Tshernova) as a subgenus of *Cincticostella* Allen (1971), which it superficially resembles. Allen (1984) restored *Vietnamella* as a valid genus in a new subtribe Vietnamellae of the tribe Ephemerellini of Ephemerellinae. This created a new problem because the presence of gills on abdominal segments 2–7 in *V. thani* is a fundamental character of the subfamily Teloganodinae. Gills on abdominal segments 3–7 are basic traits of the Ephemerellinae, Ephemerellini, subtribe Ephemerellae, and gills on 4–7 the hallmark of Ephemerellini, subtribe Timpanogae. Thus, Allen gave no characters for distinguishing *Vietnamella* from the subfamily Teloganodinae. You & Su (1987) have described larvae and adult males and females of a second species of *Vietnamella* (*V. dabishanensis*) from China. The adult characters are those of Teloganodinae. The genus *Vietnamella* is herein transferred to Teloganodinae. The cladistic relationships with typical *Teloganodes* and a derived group of *Teloganodes* are not known but the very flat larvae with prominent spines on the head, pronotum and forefemora differ markedly from other Teloganodinae. The name Vietnamellini should be retained as a tribe, but in Teloganodinae. Thus Teloganodinae has two tribes, Vietnamellini and Teloganodini.

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